

**ABSTRACT**

To identify a fault location easily if there is any fault detected in a network. If an optical path is switched from a working system to an auxiliary system due to a fault, an optical test signal originated from a network node apparatus located at an end point of the optical path is looped back by another network node apparatus on the optical path for the working system. This looped back optical signal is received by the network node apparatus of an originator, in which the signal quality of the optical test signal is measured by a determination device, thereby detecting the presence or absence of the fault on the path through which the optical test signal has been passed. A test receiver within the determination device measures a BER, an S/N ratio, an optical power, or an optical wavelength, whereby it is possible to detect not only the fault location due to disconnection of a link but also degradation in the signal quality.